

CLAIMS

1) Isolated and purified nucleic acid molecule coding for a protein constituting a protein channel exhibiting the properties and structure of the TWIK-1 type channel.

2) Isolated and purified nucleic acid molecule coding for a protein constituting a potassium channel, characterized in that it codes for the protein the amino acid sequence of which is represented in the attached sequence list as number SEQ ID NO: 2 or a functionally equivalent derivative of this sequence.

3) Nucleic acid molecule according to claim 2, the sequence of which is represented in the attached sequence list as number SEQ ID NO: 1.

4) Vector containing a nucleic acid molecule according to one of claims 1 to 3.

5) Procedure for the production of a protein constituting a potassium channel exhibiting the properties and structure of the TWIK-1 type channel consisting of:

- transferring a nucleic acid molecule according to one of claims 1 to 3 or a vector according to claim 4, into a cellular host,

- culturing the cellular host obtained in the preceding step under conditions allowing the production of potassium channels exhibiting the properties of TWIK-1,

- isolating, by any suitable means, the proteins constituting the potassium channels exhibiting the properties and structure of the TWIK-1 type channel.

6) Procedure for the expression of a potassium channel exhibiting the properties and structure of the TWIK-1 type channel consisting of:

- transferring a nucleic acid molecule according to one of claims 1 to 3 or a vector according to claim 4, into a cellular host,

- culturing the cellular host obtained in the preceding step under conditions allowing the expression of potassium channels exhibiting the properties and structure of the TWIK-1 type channel.

7) Procedure according to one of claims 5 or 6, characterized in that the cellular host is selected from among the prokaryotes or the eukaryotes and, particularly, from among the bacteria, the yeasts, mammal cells, plant cells or insect cells.

8) Cell expressing the potassium channels exhibiting the properties and structure of the TWIK-1 type channel obtained by the procedure according to claim 6 or 7.

9) Procedure for screening substances capable of modulating the activity of the potassium channels of the TWIK-1 type channel, characterized in that:

- one brings into contact variable amounts of a substance to be tested with the cells expressing the potassium channels exhibiting the properties and structure of the TWIK-1 type channel according to claim 8, then

- one measures, by any suitable means, the possible effects of said substance on the currents of the potassium channels exhibiting the properties and structure of the TWIK-1 type channel.

(10) Pharmaceutical composition for the compensation of a deficiency in the potassium channels at the level of one or more tissues, characterized in

that it comprises nucleic acid molecules according to one of claims 1 to 3, or a vector according to claim 4, or cells according to claim 8.

11) Isolated and purified protein constituting a potassium channel exhibiting the properties and structure of the TWIK-1 type channel.

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12) Protein according to claim 11, the amino acid sequence of which is represented in the attached sequence list as number SEQ ID NO: 2, or a functionally equivalent derivative of this sequence.

13) Pharmaceutical composition for the compensation of a deficiency in the potassium channels at the level of one or more tissues, characterized in that it comprises a protein according to claim 11 or 12.

14) Monoclonal or polyclonal antibody directed against a protein according to claim 11 or 12.

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